

Application No. 10/792,342

Reply to Office Action

*REMARKS/ARGUMENTS**The Pending Claims*

Claims 1-13 and 15 are pending. Claims 1-13 and 15 are directed toward a polyurethane polishing pad for chemical-mechanical polishing.

Summary of the Office Action and Advisory Action

The Office Action rejected claims 1-9, 11-13, and 15 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent 4,239,567 (hereinafter "Winings") in view of U.S. Patent 5,670,102 (hereinafter "Perman") as well as additional secondary references. Applicants acknowledge, with appreciation, the indication in the Advisory Action that the aforementioned rejections are withdrawn.

Furthermore, the Office Action rejects claims 1-13 and 15 under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent 6,406,363 (hereinafter "Xu") in view of Perman, as well as U.S. Patent 6,790,883 (hereinafter "Ogawa") and U.S. Patent 6,239,188 (hereinafter "Kihara"). The obviousness rejections based on Xu and Perman are maintained in the Advisory Action.

Discussion of the Obviousness Rejections

Perman teaches a method of making a thermoplastic foamed article having a cell size in the range of 10 to 300 micrometers, preferably 20 to 100 micrometers, and most preferably 20 to 80 micrometers (col. 2, lines 57-61).

Xu teaches a polishing belt for use in chemical-mechanical polishing having a polymeric layer forming an endless loop and a polishing surface on one side. The polymeric layer can be (1) formed from a variety of rubbers and plastics, (2) thermoset or thermoplastic, and (3) solid or cellular (col. 4, lines 7-18). In addition, Xu teaches that if a cellular polymer is used, "the cells can be open or closed and can be formed by any suitable means, including but not limited to blowing, expansion, frothing, and inclusion of hollow microelements" (col. 4, lines 22-25).

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According to Xu, in one embodiment "the polymeric material is a microcellular polyurethane having cells or voids on the order of 0.1 to 1000 micrometers in size" (col. 4, lines 25-27). The Advisory Action asserts that "[i]t is known and obvious in the art that the microcellular foam is a very unique material having a cell density of about 10^9 voids/cm³ or greater and Perman provides necessary details to practice the invention of Xu."

However, the term "microcellular" as used by Xu does not have the narrow definition ascribed by the Advisory Action. The nomenclature of cellular polymers is not standardized. While microcellular foams have been characterized by its high density of cells, i.e., 10^9 voids/cm³, by some of those of skill in the art, such microcellular foams have a corresponding cell size of 0.1 to 100 micrometers, or more typically 1 to 10 micrometers. In contrast, Xu teaches that the polishing belt can comprise microcellular polyurethane with a cell size of 0.1 to 1000 micrometers, i.e., 1 millimeter, which encompasses a much broader range than the range of cell sizes alleged in the Advisory Action. In fact, most conventional, i.e., commercial, polyurethane foams have a cell size range of 100 to 500 micrometers. Thus, not only does Xu fail to suggest the desirability of using the foam taught by Perman, Xu fails to exclude the use of most commercially available polyurethane foams for practicing the invention.

Moreover, Xu teaches that the cells can be open or closed without stating a preference, while the foam taught by Perman would predominately contain closed cells. Xu additionally teaches that the cells can be formed by any suitable means including blowing, expansion, frothing, and inclusion of hollow microelements. This list encompasses all of the major methods of manufacturing foams. Thus, Xu does not provide any teaching, suggestion, or incentive to look to Perman. Moreover, since the disclosure of Perman lacks any suggestion that the thermoplastic foam should be used for polishing pads, Perman provides no teaching, suggestion, or motivation to modify the polishing belt disclosed in Xu using the foam disclosed by Perman.

"The mere fact that the prior art could be so modified [to produce the claimed device] would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984). "Obviousness cannot be established by combining the teachings of the prior art to produce

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the claimed invention, absent some teaching, suggestion or incentive supporting the combination." *Carella v. Starlight Archery*, 804 F. 2d 135, 231 U.S.P.Q. 644 (Fed. Cir. 1986). "The showing of motivation to combine must be clear and particular, and it must be supported by actual evidence." *Teleflex, Inc. v. Ficosa North American Corp.*, 299 F.3d 1313, 63 USPQ2d 1374 (Fed. Cir. 2002).

Here, the Examiner has not produced any credible evidence which clearly and particularly suggests the desirability of combining the teachings of Xu and Perman so as to produce the claimed polishing pad. As there is no teaching, suggestion, or incentive in either of Xu and Perman that would support combining their teachings in such a way as to arrive at Applicant's invention, Xu and Perman are not properly combinable. For at least the foregoing reasons, Xu and Perman, in combination alone or with Ogawa and Khara, do not render obvious claims 1-13 and 15 of the present application.

Conclusion

Applicants respectfully submit that the patent application is in condition for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,


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